

Appl. No. 10/815,357
Amdt. Dated July 17, 2007
Reply to Final Office Action of April 17, 2007

REMARKS/ARGUMENTS

This response is being submitted in response to the Final Office Action dated April 17, 2007. A Request for Continued Examination (RCE) is being filed concurrently herewith.

Claims 19-25 were rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement. Claims 1-3, 12-14 and 18 were rejected under 35 USC §102 (a) as being anticipated by Ruzga et al. (US Patent Number 6,710,350, hereinafter "Ruzga"). Claims 7-9, 19-21, 23 and 24 were rejected under 35 USC §103 (a) as being unpatentable over Ruzga in view of Gross et al. (US Patent Number 6,310,352, hereinafter "Gross"). Claims 10 and 11 were rejected under 35 USC §103 (a) as being unpatentable over Ruzga in view of Applicant's Admitted Prior Art. Claims 1-5, 7-9, 13-16, 19-21 and 23-25 were rejected under 35 USC §103 (a) as being unpatentable over Karellas (US Patent Number 5,465,284) in view of Gross. Claim 22 is rejected under 35 USC §103 (a) as being unpatentable over Karellas in view of Gross and further in view of Pandelisev (US Patent Application Number 2002/0117625, hereinafter "Pandelisev"). Claims 1 and 13 were objected to because of certain informalities. Claims 1, 13 and 19 have been amended. Support for the amendment is found in paragraphs 27 through 31. No new matter has been added. Claims 6, 14 and 17 have been canceled. Claims 1-5, 7-13, 15, 16, 18-25 remain pending in this application. Reconsideration in view of the above amendments and following remarks is respectfully requested.

Claims 1 and 13 were objected to because of certain informalities. Applicants respectfully submit that claims 1 and 13 have been amended to correct the informalities pointed out by the Examiner. Thus, it is respectfully requested that the objection of claims 1 and 13 be withdrawn.

Claims 19-25 were rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully submit that claim 19 has now been amended to recite 'the first end of the optical transmission conduit is coupled to the at least one X-ray detecting media via the modulator and the second end is coupled to the optical detector. Support for the amendment can be found in paragraphs 27 and 28 and Fig. 2. Claims 20-25 depend directly or indirectly from claim 19. Thus, it is respectfully requested that the rejection of claims 19-25 were rejected under 35 USC §112, first paragraph be withdrawn.

Claims allowable over the prior art

Claims 1-3, 12-14, and 18 were rejected under 35 USC §102 (a) as being anticipated by Ruzga et al. The present invention, as claimed in independent claims 1, 13 and 19 is patentable

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over Ruzga. "Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W.L. Gore & Associates v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1983). Ruzga does not disclose each and every element of the present invention as claimed in independent claims 1, 13 and 19.

Claim 1 recites a radiation imaging system for generating an image of an object. The imaging system comprises an X-ray source disposed in a spatial relationship to the object configured to transmit X-ray radiation through the object, at least one X-ray detecting media configured to convert the X-ray radiation transmitted through the object to optical signals, a modulator configured for modulating the optical signals, an optical transmission conduit comprising a first end and a second end and an optical detector comprising a plurality of photosensitive devices and configured to convert each of the optical signals to a corresponding electrical signal. The first end of the optical transmission conduit is coupled to the at least one X-ray detecting media via the modulator and the second end is coupled to the optical detector.

Claim 13 recites a method for generating an image of an object comprising transmitting X-ray radiation through the object at a predetermined location, converting the X-ray radiation transmitted through the object to optical signals, modulating the modulated optical signals, providing an optical transmission path for modulated optical signals to an optical detector, wherein the optical detector comprises a plurality of photosensitive devices, and converting the each of the optical signals to corresponding electrical signal; and processing the electrical signals to generate the image.

Ruzga does not teach or disclose each and every element of claims 1 and 13. Specifically, Ruzga does not teach, suggest or disclose an optical detector comprising a plurality of photosensitive devices configured to convert each of the optical signals to a corresponding electrical signal. The system disclosed by Ruzga is particularly for a system that comprises a single photosensitive device. Specifically, Ruzga discloses a system where the light from each detection sites is conveyed from the scintillator to an optical conductor, which in turn leads to a single photodiode. Thus, at any given point, only one optical signal is selectively converted to an electrical signal whereas in claims 1 and 13 clearly recite that each optical signal is converted to a corresponding electrical signal by the optical detector. In fact, Ruzga states the advantage of using the single photodiode versus than array of photodiodes (column 6, lines 9-18). Clearly, the single photodiode of Ruzga cannot be compared to the optical detector with multiple photosensitive devices as disclosed in claims 1 and 13.

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Further, the Office Action again compares the modulator of claim 1 to the steerable mirrors 58 and gating elements 78 disclosed in Ruzga. Applicants respectfully submit that Ruzga uses the steerable mirrors and the gating elements as microelectronic switches only. Ruzga discloses the use of steerable mirrors to reflect light emitted by the scintillator towards the sidewall of the housing (column 4, lines 53-55). Similarly, the gating elements are used for directing light from a selected detection site through the routing matrix (column 6, lines 30-35). The microelectronic switches route the light from the detection sites to a common output optical channel, thus functioning as an optical multiplexer (column 4, lines 32-42). The optical multiplexer outputs an optical signal which is then converted to an electrical signal by the single photodiode. Applicants respectfully submit that an optical multiplexer cannot be compared to an optical modulator.

Therefore, the present invention as claimed in independent claims 1, 13 and 19 and claims depending therefrom, is not anticipated by Ruzga. Thus, it is respectfully requested that the rejection of claims 1-3, 12-13, and 18 under 35 USC §102 (b) be withdrawn.

Claims 7-9, 19-21, 23 and 24 were rejected under 35 USC §103 (a) as being unpatentable over Ruzga in view of Gross. Claim 19 is directed to a CT system which implements the components of recited in claim 1. Applicants respectfully submit that the arguments presented with respect to the §102 rejection are also applicable to claim 19. Claims 10 and 11 were rejected under 35 USC §103 (a) as being unpatentable over Ruzga in view of Applicant's Admitted Prior Art.

Claims 7-9, 10, 11, 19-21, 22 and 24 depend directly or indirectly from independent claims 1 and 19. Ruzga is not believed to teach, suggest or disclose each and every element of independent claims 1 and 19. Consequently, claims 7-11, 19-21, 22 and 24 are believed to be patentable both by virtue of its dependency from an allowable base claim, as well as for the subject matter it separately recites. Reconsideration and allowance of claims 7-11, 19-21, 22 and 24 on this basis are requested.

Claims 1-5, 7-9, 13-16, 19-21 and 23-25 were rejected under 35 USC §103 (a) as being unpatentable over Karellas (US Patent Number 5,465,284) in view of Gross. Claim 22 is rejected under 35 USC §103 (a) as being unpatentable over Karellas in view of Gross and further in view of Pandelisev (US Patent Application Number 2002/0117625, hereinafter "Pandelisev").

Karellas does not teach, suggest or disclose the modulator configured for modulating the optical signals as discussed in claims 1, 13 and 19. The Examiner states in the Office Action that Karellas does not disclose using an optical modulator but it would be obvious to use the optical

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amplifier disclosed in Gross in the system disclosed by Karellas. Applicants respectfully disagree for the following reasons.

Karellas invention is a spectroscopic imaging system that uses a scintillation screen and a charge coupled device (CCD) for imaging bodily tissue. The scintillation screen is optically coupled to the CCD. Karellas does not disclose using a modulator to modulate the optical signals before transmitting to the CCD. Further, Karellas does not disclose a need to modulate the optical signals. Also, nowhere does Karellas describe a need to amplify the signals from the scintillation screen since the signals are directly coupled to the CCD via lens 22 (column 3, lines 55-67). The Examiner further states that in order to transmit the signal over long distances, an amplifier would be necessary. However, Applicants argue that Karellas does not disclose the need to transmit the signals over large distances.

Gross does not overcome the deficiencies of Karellas. The pumped optical waveguide disclosed by Gross, comprises an optical fiber that serves as an optical amplifier for incident radiation. Gross does not disclose a modulator for first modulating the optical signals and then transmitting the modulated optical signals using an optical conduit. Gross, instead discloses amplification that occurs within the optical waveguide itself. Hence, the pumped optical waveguide of Gross cannot be compared to the modulator of claims 1, 13 and 19.

Thus, no reasonable combination Karellas with Gross would obtain Applicant's recited invention of a radiation imaging system for transmitting modulated optical signals through an optical conduit from an X-ray detecting media to an optical detector as described in claim 1, 13 and 19.

Further there is no motivation in Karellas to combine it with Gross. Karellas does not teach, suggest or disclose the need for modulators while Gross teaches using only optical amplifiers within the optical waveguide. Therefore, Karellas either alone or in combination with Gross does not teach, suggest or disclose Applicants' invention as cited in claim 1, 13 and 19.

Obviousness cannot be established absent a teaching or suggestion in the prior art to produce the claimed invention. For a prima facie case of obviousness, the Examiner must set forth the differences in the claim over the applied references, set forth the proposed modification of the references, which would be necessary to arrive at the claimed subject matter, and explain why the proposed modification would be obvious. It is well-established law that the mere fact that references may be combined or modified does not render the resultant modification or combination obvious unless the prior art suggests the desirability of the modification or combination.

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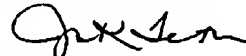
Therefore, the present invention, as claimed in independent claim 1, 13 and 19 is patentable over Karellas in view of Gross. Accordingly, Applicants submit that claims 2-5,7-9, 15,16, 20-21 and 23-25 are allowable by dependency. Thus, it is respectfully requested that the rejection of claims 1-5,7-9,13, 15,16,19-21 and 23-25 under 35 USC §103(a) be withdrawn.

Claim 22 is rejected under 35 USC §103 (a) as being unpatentable over Karellas in view of Gross and further in view of Pandelisev. Claim 22 depends indirectly from independent claim 19. Karellas is not believed to teach, suggest or disclose each and every element of independent claim 19. Consequently, claim 22 is believed to be patentable both by virtue of its dependency from an allowable base claim, as well as for the subject matter it separately recites. Reconsideration and allowance of dependent claim 22 on this basis are requested.

In view of the foregoing amendment and for the reasons set out above, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested.

Should the Examiner believe that anything further is needed to place the application in condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,



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Attachment: Request for Continued Examination (RCE)